

## **Distribution Of $^{14}\text{C}$ -PhIP In Lactating Female Rats and their Suckling Pups at Low Doses Using Accelerator Mass Spectrometry.**

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2-Amino-1-methyl-6-phenylimidazo-[4,5-*b*]pyridine (PhIP) is a mammary carcinogen in female rats and is present in a wide variety of cooked meats. Lactating female F344 rats with suckling pups were gavaged with doses ranging from 50-1000 ng/kg  $^{14}\text{C}$ -PhIP. The excretion of the  $^{14}\text{C}$ -PhIP in the milk and distribution of  $^{14}\text{C}$ -PhIP into the mammary tissue, liver and blood of the dam as well as in the stomach contents, liver and urine of their suckling pups were measured using Accelerator Mass Spectrometry (AMS).  $^{14}\text{C}$ -PhIP-derived radioactivity increased in a dose dependent manner in both the milk and stomach contents of the pups as well as in the other tissues measured. Lactating female rats also were dosed with 500  $\mu\text{g}/\text{kg}$  chlorophyllin in conjunction with a 500  $\mu\text{g}/\text{kg}$   $^{14}\text{C}$ -PhIP dose. The chlorophyllin treatment caused increased levels of  $^{14}\text{C}$ -PhIP in the milk and stomach contents of the pup while decreasing levels in all other tissues measured. The results from these studies suggest that at dietary levels of PhIP, PhIP and/or PhIP metabolites are excreted into the breast milk and absorbed by the newborn. The findings raise the possibility that there is a carcinogenic risk to the newborn by exposure to low levels of PhIP via the breast milk. The addition of chlorophyllin to the dosing regimen demonstrates that other components in the diet may modulate the excretion of  $^{14}\text{C}$ -PhIP-derived radioactivity into the breast milk and alter the uptake into tissues of newborns. The use of AMS in these experiments allows for the detection of low attomole ( $10^{-18}$  moles) levels of the  $^{14}\text{C}$ -PhIP derived radioactivity in tissues making studies at human relevant doses of food mutagens, such as PhIP, possible.

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